

Program Direction Session (Tuesday, July 19th at 2:45pm ET)

Reminder!!

Respond to Polling Questions:

1. Scan the QR code using your mobile device or;
2. Type the following link into any web browser:

bit.ly/3RAh6Ue



Question: 1

Undergrounding MV power lines is a diverse problem that must consider various possible scenarios. Should ARPA-E aim to improve technologies for the broadest possible number of cases or focus on the hardest technical cases? Which instances should ARPA-E concentrate on, and why? For example, specific targets could be urban/suburban/rural or primary 3-phase main feeder/primary 3-phase laterals/secondary laterals to a single meter.

Question: 2

According to an EPRI report (<https://www.epri.com/research/products/3002006782>), the general cost breakdown of undergrounding power lines (excluding 'other costs' such as repaving the road, restoring the landscape, and compensating impacted persons nearby) is around 50 percent materials/equipment and 50 percent labor. Is this breakdown accurate when 'other costs' are factored in? If not, where are the gaps and where is the most possibility to reduce overall undergrounding costs?

Question: 3

Should ARPA-E prioritize component-level solutions (e.g., borehole drilling, conduit installation, vault construction, vertical access points, cable pulling) or system-level solutions in the underground construction category? How should a system-level target be specified (what are its essential components)?

Question: 4

Is the following a suitable nominal cable/conduit to target for the construction and automated splicing category? Please provide your inputs on this choice: primary 3-way main feeder, each cable is a 500 MCM 0.75"D Cu single core with EPR, 15-25 kV, 500 Amp (@90C in duct), 1.5"OD cable in a 6"ID conduit buried at 3-6' depth, min. cable bend radius of 20" (installed), cable weight of 2500 lbs/1000 ft, 1/3 neutral and multi-point grounding (ICEA methods)

Question: 5

Should the scope of a potential ARPA-E program include new materials development (provide an example and rationale)? Should the scope include purely software tools (e.g. updating benefit-cost analysis tools, determining the best part of the circuit to underground, identifying co-burying opportunities with other utilities for cost sharing)?

Question: 6

Suppose new technologies for undergrounding power distribution systems, machine-assisted splicing, and predicting and locating potential faults are developed. What scale should each technology development target to convince the risk-averse power utility industry?

Question: 7

Today's MV underground cables are made of solid dielectrics (EPR, XLPE, PP). Should the potential ARPA-E program solely focus on these types of cables (vs. Fluid-filled type)? Should the program be open to novel conductors (e.g. carbon) or superconducting cables for the distribution grid?

Question: 8

What are the potential ‘shifted risks’ when powerlines are undergrounded, and what are potential design considerations to mitigate such risks?

Question: 9

Why would utility companies be incentivized to pay attention to new undergrounding technologies that are smaller/earlier demos than usual and promote more out-of-the-box ideas and crazy but potentially enabling projects on a smaller scale?